

STN Karlsruhe

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NOVELTY - Preparation of carbamato-organosilanes (V) is new.

DETAILED DESCRIPTION - Preparation of carbamato-organosilanes (V) involves:

(a) single-stage reaction of amino-organosilanes (I), urea (II) and alcohols (IV) in a cascade of stirred vessels at 150-250 deg. C and 7-40 bars or

(b) reaction of (I) and (II) in (IV) (as solvent) in a distillation reactor at 100-130 deg. C and 0.7-1.5 bars (absolute) to give ureido-organosilanes (III), followed by reaction of the intermediates (III) with (IV) in a pressure distillation reactor at 150-250 deg. C and 7-40 bars.

INDEPENDENT CLAIMS are included for:

(i) the preparation of (III) as in the first stage of method (b); and  
(ii) the preparation of isocyanato-organosilanes (VI) by preparing (V) as in method (a) or (b), followed by catalytic cleavage of (V) in a liquid phase.

USE - (III), (V) and (VI) are polyfunctional reactants having numerous uses, e.g. as surface modifiers inorganic or organic materials, as promoters of adhesion between inorganic materials and organic polymers, as crosslinking agents in the moisture-induced crosslinking of polymers, in polyurethane sealant compositions, in the lacquer and adhesive sectors and as intermediates for biological agents such as insecticides and herbicides.

ADVANTAGE - (III), (V) and (VI) can be prepared economically (especially in a continuous process) while avoiding disadvantages of prior art methods such as by-product formation, low selectivity and/or yield, high catalyst concentrations and high reaction temperatures.  
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